

Name _____

Graph and Analyze Relationships

Essential Question How can you write and graph ordered pairs on a coordinate grid using two numerical patterns?

COMMON CORE STANDARD CC.5.OA.3

Analyze patterns and relationships.

UNLOCK the Problem REAL WORLD

Sasha is making hot cocoa for a party. For each mug of cocoa, he uses 3 tablespoons of cocoa mix and 6 fluid ounces of hot water. If Sasha uses an entire 18-tablespoon container of cocoa mix, how many fluid ounces of water will he use?

STEP 1 Use the two given rules in the problem to generate the first four terms for the number of tablespoons of cocoa mix and the number of fluid ounces of water.

Cocoa Mix (tbsp)	3					18
Water (fl oz)	6					

STEP 2 Write the number pairs as ordered pairs, relating the number of tablespoons of cocoa mix to the number of fluid ounces of water.

(3, 6)

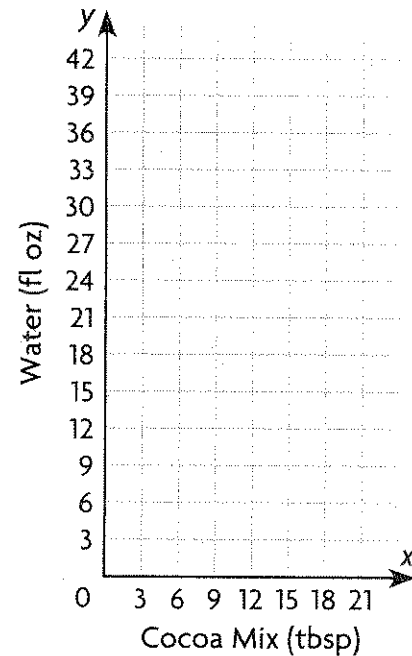
STEP 3 Graph and label the ordered pairs. Then write a rule to describe how the number pairs are related.

- What rule can you write that relates the amount of cocoa mix to water?

So, Sasha will use _____ fluid ounces of water if he uses the entire container of cocoa mix.

• How many tablespoons of cocoa mix does Sasha add for each mug of cocoa?

• How many fluid ounces of water does Sasha add for each mug of cocoa?



- Write the final number pair as an ordered pair. Then graph and label it. Starting at the origin, connect the points with straight line segments. What do the connected points form? Explain why this is formed.

Example

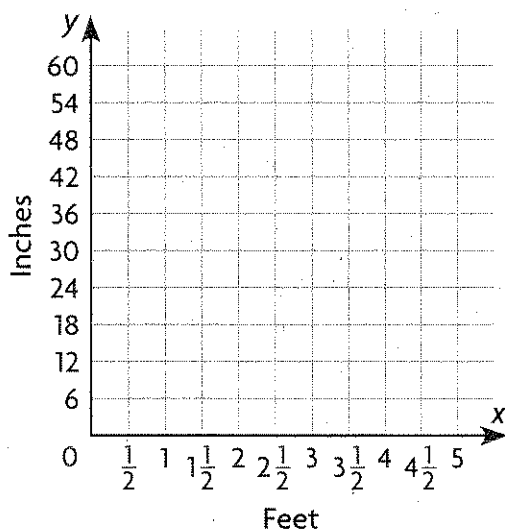
Jon is customizing an audio sound system. He needs to buy $3\frac{1}{2}$ feet of cable wire, but it is sold in inches. He knows there are 12 inches in 1 foot. How many inches of wire will he need?

Feet	1	2	3	4
Inches	12			

Rule: Multiply the number of feet by _____.

STEP 1 Write the number pairs as ordered pairs, relating the number of feet to the number of inches.

STEP 2 Graph the ordered pairs. Connect the points from the origin with straight line segments.



STEP 3 Use the graph to find the number of inches in $3\frac{1}{2}$ feet.

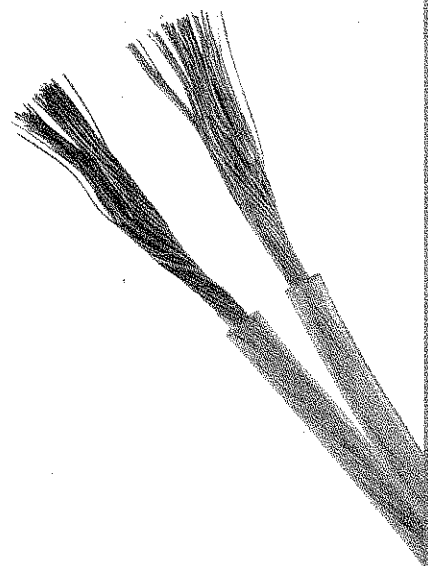
Think: $3\frac{1}{2}$ is between the whole numbers _____ and _____.

Locate $3\frac{1}{2}$ on the x-axis.

STEP 4 Draw a vertical line from $3\frac{1}{2}$ on the x-axis to the line that connects the ordered pairs. Then graph that point.

To find how many inches equal $3\frac{1}{2}$ feet, draw a horizontal line from that point left to the y-axis. What is the ordered pair for the point?

So, Jon needs to buy _____ inches of cable wire.



Problem Solving **REAL WORLD**



Sense or Nonsense?

5. Elsa solved the following problem.

Lou and George are making chili for the Annual Firefighter's Ball. Lou uses 2 teaspoons of hot sauce for every 2 cups of chili that he makes, and George uses 3 teaspoons of the same hot sauce for every cup of chili in his recipe. Who has the hotter chili, George or Lou?

Write the related number pairs as ordered pairs and then graph them. Use the graph to compare who has the hotter chili, George or Lou.

Lou's chili (cups)	2	4	6	8
Hot sauce (tsp)	2	4	6	8

George's chili (cups)	1	2	3	4
Hot sauce (tsp)	3	6	9	12

Lou's chili: $(2, 2), (4, 4), (6, 6), (8, 8)$

George's chili: $(1, 3), (2, 6), (3, 9), (4, 12)$

Elsa said that George's chili was hotter than Lou's, because the graph showed that the amount of hot sauce in George's chili was always 3 times as great as the amount of hot sauce in Lou's chili. Does Elsa's answer make sense, or is it nonsense? Explain.

